

WHAT IS CLAIMED IS:

1. A method for dynamic contrast enhancement by area gray-level detection with an image comprising steps of:

transferring color space of said image from color space of RGB to
5 that with brightness Y;

making a brightness distribution histogram based on brightness of said image to get a corresponding relation between a gray level value and a count;

dividing the whole brightness distribution into even brightness
10 distribution areas by gray level value, and calculating each amount of counts of each brightness distribution area;

according to said amount of counts, deciding a transfer curve to do brightness histogram equalization to the image for forming a new image with enhanced contrast.

15 2. The method according to Claim 1 wherein said color space with brightness Y is YCrCb.

3. The method according to Claim 1 wherein said color space with brightness Y is YPbPr.

4. The method according to Claim 1 wherein In accordance with one
20 aspect of the present invention, the color space with brightness Y is YUV.

5. The method according to Claim 1 wherein said counts here mean the quantity of pixels of a gray level value in said image.

6. The method according to Claim 1 wherein the range of said gray level
25 value is from 0 to 255.

7. The method according to Claim 1 wherein the steps of deciding said transfer curve based on the amounts of counts are :

making that each brightness distribution area is respectively named $A_1, A_2, \dots, A_{n-1}, A_n$, and each amount of counts of $A_1, A_2, \dots, A_{n-1}, A_n$ is respectively named $Q_1, Q_2, \dots, Q_{n-1}, Q_n$, where n means the number of each brightness distribution area;

5 making $H_1 = Q_1 + Q_2, H_2 = Q_3 + Q_4, \dots, H_{n/2} = Q_{n-1} + Q_n$;

making $Y_{out}(1) = Y_{in}(1) * Q_1 / H_1, Y_{out}(2) = Y_{in}(2) * Q_3 / H_2, \dots, Y_{out}(n/2) = Y_{in}(n/2) * Q_{n-1} / H_{n/2}$, where $Y_{in}(1)$ is said gray level value of the boundary points of A_1 and A_2 ; $Y_{in}(2)$ is said gray level value of the boundary points of A_3 and A_4 ; ...; $Y_{in}(n/2)$ is said
10 gray level value of the boundary point of A_{n-1} and A_n . And, $Y_{out}(1), Y_{out}(2), \dots, Y_{out}(n/2)$ are gray level values of the image with enhanced contrast;

getting said transfer curve by the corresponding relation between $Y_{in}(1)$ and $Y_{out}(1), Y_{in}(2)$ and $Y_{out}(2), \dots, Y_{in}(n/2)$ and $Y_{out}(n/2)$.

15 8. The method according to Claim 1 wherein a move average is calculated by $Y_{out}(1), Y_{out}(2), \dots, Y_{out}(n/2)$ of multiple images.

9. The method according to Claim 1 wherein said images include four successive images.

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